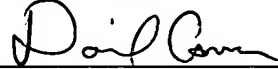


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METHOD AND APPARATUS FOR
LAMINATING DOCUMENTS

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METHODS AND APPARATUS FOR LAMINATING DOCUMENTS

1 This is a Continuation-in-part of Application Serial No. 10/457,310 filed
2 on June 9, 2003, which claims priority from Provisional Application Serial No.
3 60/465,405, filed on April 24, 2003.

4 This invention relates to methods and apparatus for laminating
5 documents, and more particularly, to methods and apparatus for laminating
6 photographs without lamination equipment.

BACKGROUND OF THE INVENTION

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8
9 Documents such as driver's licenses and security badges are routinely
10 provided with a second substrate, preferably transparent laminate, to protect the
11 documents from damaging environmental conditions such as moisture. The document
12 is placed in a lamination machine that heats the second substrate surface as needed,
13 applies the preferably transparent laminate material to the documents and trims the
14 material. The process is effective, but the lamination machine is expensive and
15 inconvenient. Thus, there is a need for lamination methods and apparatus that do not
16 require such lamination equipment.

17 Accordingly, one object of this invention is to provide new and improved
18 methods and apparatus for laminating documents.

Another object is to provide new and improved methods and apparatus for laminating documents that do not require lamination equipment for applying the lamination to the document.

Still another object is to provide new and improved methods and apparatus for conveniently and inexpensively laminating documents.

SUMMARY OF THE INVENTION

In keeping with one aspect of the invention, a substrate of label stock or the like has pressure sensitive material on one side, covered by release material. A portion of the release material is folded back along one edge of the substrate, exposing the pressure sensitive adhesive along that edge and thus creating a pull tab. A transparent laminate is secured to the substrate along that edge by the exposed pressure sensitive adhesive. The transparent film and/or pressure sensitive material can be printed, if desired, particularly around the outside edges.

A photograph or other document can be secured inside the device by lifting the unadhered portion of the laminate that covers the release material, placing the photograph between the film lamination and the pressure sensitive substrate above the tab, removing the release layer by pulling the tab outward to expose the remainder of the pressure sensitive adhesive layer, and pressing the photograph and laminate against the lower substrate. The photograph can be smaller than the laminate product, so that the lamination is secured to the base substrate around all of its outer edges.

1 The lamination product is made by moving a web of pressure sensitive
2 adhesive material, having release material on one side, along a path that may include
3 one or more printing stations, if desired. The release material may be perforated, scored
4 or optionally slit to allow the release layer to be folded back after a conventional plough
5 station. The folded back portion of the release liner exposes the pressure sensitive
6 adhesive along an edge of the web.

7 A web of the second substrate, preferably transparent laminate material,
8 which may also be printed on either or both sides, is married to the underlying web after
9 the release layer is exposed, and secured to the web along the exposed edge of
10 pressure-sensitive adhesive. The web is then die cut into individual pieces having a
11 desired size.

12 Another embodiment of the lamination product has a support structure
13 including at least one leg defined by at least one perforated line that the leg can be
14 separated and positioned to support the product upright on a table or the like.

15 Yet another embodiment of the lamination product includes a support
16 structure having a leg defined by at least one cut line such that the leg can be positioned
17 to support the product upright on a table or the like.

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20 BRIEF DESCRIPTION OF THE DRAWINGS

21 The above mentioned and other features of this invention and the manner
22 of obtaining them will become more apparent, and the invention itself will be best

understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a cut-away side view of a lamination product made in accordance with the present invention;

Fig. 2 is a cut-away side view of the product of Fig. 1, showing a photograph inserted in the assembly, but not secured;

Fig. 3 is another cut-away side view of the product of Fig. 1, showing the release liner being removed from the product after the photo is inserted;

Fig. 4 is a cut-away side view of the product of Fig. 1, showing the lamination secured;

Fig. 5 is front perspective view of the lamination device of Fig. 1, as manufactured;

Fig. 6 is a front perspective view of Fig. 5 showing a photograph inserted in the product;

Fig. 7 is a front perspective view of the lamination product of Fig. 5, showing the release liner as it is removed;

Fig. 8 is a front perspective view of the product of Fig. 5, with the photograph secured inside the product;

Fig. 9 is a diagram illustrating the manufacturing process used to make the product of Fig. 1;

Fig. 10 is a front perspective view of an alternate embodiment of the lamination device, as manufactured;

Fig. 11 is a front perspective view of the product of Fig. 10 showing a photograph inserted in the product and the release liner as it is removed;

Fig. 12 is a back perspective view of the product of Fig. 10 showing the perforation of the legs;

Fig. 13 is a front perspective view of the product of Fig. 10 showing the legs detached and supporting the device.

Fig. 14 is a front perspective view of another alternate embodiment of the lamination device, as manufactured;

Fig. 15 is a front perspective view of the product of Fig. 14 showing the release liner as it is removed;

Fig. 16 is a back perspective view of the product of Fig. 14 showing the die-cut of the leg; and

Fig. 17 is a front perspective view of the product of Fig. 14 showing a photograph inserted and the leg detached and supporting the device.

DETAILED DESCRIPTION

As seen in Fig. 1, a lamination product 10 includes a layer 12 of unsupported film that can be print receptive on both sides, and a layer 14 that includes a layer 16 of paper or film, releasably adhered to a layer of paper or film 18, through a pressure sensitive adhesive 20. The film can be clear or tinted film substrate, typically

1 a laminate, and the release layer 18 is ordinary release liner used for pressure sensitive
2 adhesive labels. Adhesive layer 20 can be any suitable pressure sensitive or other
3 suitable adhesive, and the substrate 16 can be label stock or any other suitable material.

4 As seen in Fig. 2, a portion 22 of the release layer 18 is folded over a
5 larger portion 24, which exposes a portion 26 of the adhesive on the base substrate 16,
6 so that an edge portion 28 of the laminate 12 is directly adhered to the portion 26 of the
7 substrate 16. In this manner, a hinge 36 is formed in the laminate 12.

8 A portion 30 of the laminate 12 is not adhered to a portion 32 of the
9 substrate 16, due to the intervening release layer 24. In this manner, the portion 30 can
10 be lifted from the portion 32 to insert a photograph 34 other document into the device
11 10 above the tab 22 created by the folded section of the release layer 18.

12 Preferably, the photograph 34 is smaller in size than the portion 32, so
13 that the outside edges of the adhesive in the portion 32 can contact the underside of the
14 portion 30 when the release liner 24 is removed, although extra space is not necessary
15 at the hinge 36.

16 After the photograph 34 is inserted into the device 10, as shown in Fig. 2,
17 the release liner 18 can be easily removed, as seen in Fig. 3. The tab 22 can be used to
18 remove the release liner, or the release liner can be removed in any other desirable
19 manner.

20 The photograph 34 is shown fully laminated in the device 10 in Fig. 4.
21 Because the adhesive 20 is pressure sensitive, the laminate 12 can be easily adhered to
22 the substrate 16. In other words, with the release liner 18 completely removed, the

1 laminate can be sealed around the edges of the photograph 34. In this manner, the
2 photograph 34 itself is adhered to the base layer 12 by the adhesive 20, and the
3 photograph 34 is covered by the laminate 12.

4 The device 10 is also shown in Figs. 5 through 8. The product 10 as
5 obtained by a consumer is shown in Fig. 5, where it is apparent that the portion 30 of the
6 laminate 12 can be lifted from the substrate 16 due to the intervening release liner 18.
7 The hinge 36 can also be seen in Fig. 5, as can the manner in which the portion 28 is
8 adhered along an edge of the substrate 16.

9 Fig. 6 illustrates insertion of the photograph 34 into the device 10. In this
10 figure, it is apparent that the photograph 34 is inserted beneath the laminate 12, over the
11 entire release liner 16, including the tab portion 22. While Fig. 6 shows the photograph
12 34 abutting the hinge 36, the photograph 34 could be spaced from the hinge 36, if
13 desired. In any event, the release layer 18 is removed in the manner shown in Fig. 7. It
14 is most easily removed by pulling the tab portion 22, but it could also removed from any
15 other portion of the release liner.

16 When the release liner 18 is removed, the laminate 12 can be easily
17 adhered to the base layer 16, as seen in Fig. 8. The photograph 34 is also adhered to the
18 base layer 16. It is apparent from Fig. 8 that the photograph 34 is smaller than the base
19 layer 16, though, so that the laminate 12 is adhered around all of the outside edges of the
20 photograph 34.

21 The process for manufacturing the lamination products 10 is illustrated in
22 Fig. 9. A reel 50 of clear synthetic material such as polypropylene, vinyl or any other

1 suitable material, is unrolled along a path 52, and a reel 54 of pressure sensitive material
2 is unwound along a path 56. The pressure sensitive material 54 has one surface coated
3 with a removable layer of release liner that when removed, exposes a layer of pressure
4 sensitive adhesive.

5 The laminate 50 may be printed on one or both sides at one or more print
6 stations 58, and the pressure sensitive material can also be printed, on one or both sides,
7 at print stations 60.

8 The pressure sensitive material 54 is perforated and/or partially slit at a
9 station 62, to allow the release liner to be folded back at a plow station 64. While the
10 release liner is preferably folded back, as shown in Figs. 1-8, it is contemplated that the
11 release liner could be slit and the unwanted portion of the release liner removed.

12 The laminate 50 is adhered to the base substrate 54 at a station 66, which
13 could be nip rollers or the like. The laminate 50 is adhered to the substrate 54 along the
14 exposed edge of the substrate 54, and the remaining portion of the laminate rests
15 un-adhered over the release liner. The married webs are die-cut at a station 68,
16 producing the lamination products 10.

17 Referring now to Figs. 10-13, an alternate embodiment of the present
18 lamination product is generally designated 110 and is generally similar to the first
19 embodiment 10 except that in addition to the features of the first embodiment, the
20 alternate embodiment includes a support structure 175. Like components of lamination
21 products 10 and 110 have been designated with the same last two digits in their
22 reference numbers.

1 In this embodiment, the lamination product 110 includes a laminate layer
2 112 of unsupported film, a lower layer 116 of paper or film, a pressure sensitive
3 adhesive layer 120, and a release layer 118. Each layer 112, 116, 118 and 120 is
4 perforated along a perforated line 178 on at least one, but preferably two opposing
5 edges 180 of the lamination product 110 such that, when the layers are assembled to
6 form the lamination product, the perforation of the layers are aligned. As shown in Fig.
7 12, the perforated line 178 extends a length less than the total length of the opposing
8 edges 180 and is inwardly located a predetermined length from the opposing edge to
9 define at least one leg 182. Although the lamination product is shown with two
10 perforated lines 178 that are parallel to the opposing edges 180, other numbers and
11 alignments of perforated lines are contemplated. It is also contemplated that the
12 perforated line may be die-cut instead of perforated.

13 After the photograph 34 is inserted into the lamination product 110, the
14 release liner 118 can be removed, as shown in Fig. 11. The tab 122 may be used to
15 remove the entire release liner 118. When the photograph 34 is adhered to the base
16 layer 112 by the adhesive 120, the laminate 112 covers the photograph 34 and can be
17 adhered to the base layer. The photograph 34 is preferably smaller than the base area
18 between the legs 182, so that the laminate 112 is adhered around all of the outside edges
19 of the photograph.

20 Upon laminating the photograph 34, the user may separate the
21 perforations, such as by tearing or cutting along the perforated lines 178 on the now
22 adhered layers 112, 116, and 120. The layers 112, 116, and 120 may be folded away

1 from the rear surface of the product 110 to form the support structure 175, which
2 includes the at least one leg 182 and a fold line 184, such that the lamination product
3 110 may be supported on a table or the like in an upright position by the legs 182.

4 The process for manufacturing the lamination product 110 is similar to
5 the manufacturing process of lamination product 10, but also includes the step of
6 perforating layers 112, 118, 120 and 116 along preferably two perforated lines. This
7 step may occur either before or after the married webs are die-cut into individual
8 lamination products 110.

9 Referring now to Figs. 14-17, another alternate embodiment of the
10 present lamination product is generally designated 210 and is generally similar to the
11 first embodiment 10, except that in addition to the features of the first embodiment, the
12 third embodiment includes an alternate support structure 275. Like components of
13 lamination products 10, 110 and 210 have been designated with the same last two digits
14 in their reference numbers.

15 In this embodiment, the lamination product 210 includes a laminate layer
16 212, a lower layer 216, a pressure sensitive adhesive layer 220, and a release layer 218.
17 Layers 216, 218 and 220 are die-cut along preferably two first cut lines 278 at generally
18 the center of the lamination product 210 such that, when the layers are assembled into
19 the lamination product, the die-cuts of each layer are aligned with the other die-cuts.
20 Cut lines 278 are preferably not continuous, but have a tear portion 281 located near the
21 bottom edge. The two cut lines 278 may be parallel or skewed with respect to opposed
22 edges 280.

1 Release layer 218, but not lower layer 216 or adhesive layer 220, is also
2 die cut to form a second cut line 279 at a location between the two cut lines 278 (best
3 seen in Figs. 15 and 16). The first cut lines 278 extend a length less than the total length
4 of the opposing edges 280 and are inwardly located a length from the opposing edge.
5 First cut lines 278 and second cut lines 279 intersect to define a leg 282. Although the
6 lamination product is shown with first and second cut lines 278, 279 generally
7 perpendicular to each other, other numbers and alignments of the die-cuts are
8 contemplated. It is also contemplated that the cut lines may be perforated instead of
9 die-cut.

10 In use, the release layer 218 can be removed by removing the tab 222. As
11 shown in Fig. 15, the release layer 218 is removed from the pressure sensitive layer 220
12 except for over the area defined by the leg 282. Because only the release layer 218 is
13 cut at cut line 279, a portion 284 of the release layer remains adhered.

14 When the photograph 34 is adhered to the base layer 212 by the exposed
15 adhesive layer 220, or the area of adhesive layer outside of the leg 282, the laminate 212
16 covers the photograph 34 and can be adhered to the base layer. Upon laminating the
17 photograph 34, the user may separate the tear portion, such as by tearing or cutting. The
18 layers 216, and 218, and 220 may be folded along the second cut line 279 such that the
19 leg 282 supports the lamination product 210.

20 Manufacturing the lamination product 210 is similar to manufacturing the
21 lamination product 10, with the additional steps of die-cutting the release layer 218
22 along the second cut line 279, and die-cutting the release layer, the adhesive layer 220,

1 and the lower layer 216 along the first cut line 278. In the preferred method of
2 manufacturing, the release layer 218 is die-cut along the second cut line 279 before
3 being adhered to the lower layer 216 with the adhesive layer 220. Similar to the first
4 embodiment, when the reel of layers 218, 216, and 220 is unrolled, the layers can be
5 perforated and/or partially slit at station 62. Additionally, layers 218, 216, and 220 can
6 be die-cut along the first cut line 278 at station 62, although other processes are
7 contemplated.

8 While the principles of the invention have been described above in
9 connection with specific apparatus and applications, it is to be understood that this
10 description is made only by way of example and not as a limitation on the scope of the
11 invention.